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**Attitudes  
of  
South Dakota  
Farm Operators  
toward  
Wetlands  
and  
Waterfowl  
Production**



**Agricultural Experiment Station  
South Dakota State University, Brookings**

*The basic data for this publication were secured from the Rural Sociology Department's South Dakota Experiment Station Project No. 516—"Social and Institutional Aspects of Human Behavior Affecting Natural Resource Development and Conservation." The initial phase of this project was conducted in cooperation with the Wildlife and Fisheries Sciences Department at South Dakota State University.*

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## Attitudes of South Dakota Farm Operators toward Wetlands and Waterfowl Production

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The Central Flyway, which includes a large area of the North Central States, is crucial to the existence of many types of waterfowl. Ducks, geese, crane and coot are dependent on this flyway which covers over 1,115,000 square miles of territory.<sup>1</sup>

Part of the Central Flyway is commonly known as the North American Prairie Pothole Region and covers over 300,000 square miles. South Dakota's role in the Prairie Pothole Region is important because 855,000 acres of good quality wetlands are within the state. These wetlands, in turn, supply annually about 10% of the total number of ducks within the Central Flyway.<sup>2</sup>

<sup>1</sup>Joseph Linduska, (ed.), *Waterfowl Tomorrow* (Washington, D. C.: United States Government Printing Office, 1964), pp. 200-210.

<sup>2</sup>William A. Niering, *The Life of the Marsh* (New York: McGraw-Hill Book Co., 1966), p. 176.

Conditions in the prairie region, however, are not always ideal for waterfowl production. Among the natural factors which affect waterfowl production are fire, flood, hail, disease, and starvation. The most important variable which affects the reproduction rate of migratory waterfowl is the amount of water available. For example, during the late 1950's and early 1960's, the number of ducks decreased substantially because of drought conditions in the Prairie Pothole Region.<sup>3</sup>

Up to the present time, man has been relatively ineffective in controlling climatic and natural conditions such as storms, floods, and earthquakes. Of crucial importance, however, is man's capacity to alter or neglect certain geographical conditions which are important factors in waterfowl production.

In the last century, increasing intensity of land use has been slowly

<sup>3</sup>Linduska, *op. cit.*, pp. 228-229.

reducing land available for waterfowl production. If this trend continues, waterfowl production may be reduced. State and federal officials have long been aware of this problem. Due primarily to threatening conditions of the wildlife's natural habitat, several programs have been initiated to conserve and create an environment conducive to reproduction of certain animal species. Among these programs are the Waterfowl Production Areas Program, Wildlife Habitat Improvement Program, and the Cropland Adjustment Program. If South Dakota hopes to capitalize on recreation and hunting, it is important to ascertain both the favorable or unfavorable attitudes of the farm operators toward wetlands, drainage, and waterfowl production, parti-

cularly since these operators control the use of the land.

A scoring system rated from 1 to 5 was used for each attitude question to determine degree of favorableness. A score of 1 indicated a least favorable and a score of 5 indicated a most favorable response to attitude questions. For example, 9 questions were used to measure attitudes toward waterfowl production. Adding the scores for the 9 questions together would give a total score varying from 9 to 45. These total scores were then divided into 3 groups with the highest score group considered to be "most favorable," the middle score group "moderately favorable" and the lowest score group comprising those "least favorable" in attitude toward waterfowl production.

### Characteristics of Farm Operators and Farm Operations

The amount of property in wetlands on the farmstead ranged from zero to over 10%. More than 50% of the farm operators indicated that they had less than 5% of their farmland in wetlands. (Table 1).

#### Setting of the Study

Eastern South Dakota has vast amounts of wetlands in the form of sloughs, potholes, lakes and rivers. Several counties in eastern South

Dakota are located on what is commonly called the Couteau des Prairie, a large plateau covered with glacial drift and having an elevation of 1,600-2,000 feet. On a longitudinal axis, the plateau slopes southward ending at the Big Sioux River.<sup>4</sup> Along with smaller potholes and sloughs, this area includes larger lakes such as Buffalo, Enemy Swim, Hendricks, Herman, Madison, Poinsett, Punished Woman, Roy and White.<sup>5</sup>

Farm operators from four counties within the Couteau des Prairie

Table 1. Land Acreage in Wetlands

Acreage in Wetlands (Per cent)	Responses	
	Number (N—292)	Per Cent (100%)
0-5 .....	151	52
6-10 .....	71	24
Over 10 .....	71	24

<sup>4</sup>Artwin E. Schmidt, *Limnology of Selected South Dakota Lakes* (Brookings, South Dakota: South Dakota State University, 1967), p. 6.

<sup>5</sup>*Ibid.*

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were interviewed. The counties involved were Day, Marshall, Codington, and Brookings. Of the 2,323 farm operators located in the area, 292 were interviewed.

### Objectives

The first objective is to describe certain characteristics of the farm operator and his farm operation as these relate to wetlands drainage and waterfowl production. The second is to analyze the degree to which farm operators attitudes are favorable toward wetlands, drainage, and waterfowl production programs.

### Participation in Programs

Table 2 contains information concerning program participation. Although many farm operators had property in wetlands, many farmers—over 40% of the interviewees—have drained water from their property.

Each farm operator participating in the study was asked if he were involved in any wetland programs including the Crop Adjustment, Waterfowl Production, and the Wildlife Habitat Improvement Programs. The study revealed that the percentage of farm operators who have property in wetlands is relatively high, but few are involved in any of these programs.

Since attitudes are often affected by reference groups (those groups to which the individual belongs or would like to belong) each farm operator was asked to indicate whether or not close neighbors were involved in wetland, drainage, and/or waterfowl production programs. Respondents indicated that

**Table 2. Participation in Wetlands and Drainage Programs**

	Response (N—292)	Per Cent (100%)
Operators Participating in Drainage Program		
Yes	129	44
No	163	56
Operators Participating in Wetlands Program		
Yes	57	20
No	235	80
Neighbors Participating in Wetlands Program		
Yes	106	37
No	100	34
Don't Know	86	29
Neighbors Participating in Drainage Program		
Yes	55	19
No	144	49
Don't Know	93	32

**Table 3. Participation in Hunting**

	Number (N—292)	Per Cent (100%)
Duck Hunting		
Yes	123	42
No	169	58
Goose Hunting		
Yes	90	31
No	202	69
Pheasant Hunting		
Yes	144	49
No	148	51
Grouse Hunting		
Yes	21	7
No	271	93
Deer Hunting		
Yes	98	34
No	194	66

more close neighbors were involved in wetlands conservation programs than drainage programs. However, the number of respondents in the "don't know" category was rather large for both the wetland and drainage programs.

### **Participation in Hunting**

To determine whether any relationship exists between attitude toward wetlands, drainage and waterfowl production and the types of hunting farm operators participate in for recreational purposes, each farm operator was asked if he had

recently hunted duck, pheasant, deer, goose, or crane. It is important to note that the duck, goose, and crane are included in the classification of migratory waterfowl and are therefore highly dependent on wetlands for reproduction. The pheasant, grouse, partridge and deer are not highly dependent on wetlands because they are upland species. Table 3 contains responses concerning hunting patterns. So small a number of the group had been crane or partridge hunting that the number was considered insignificant.

## **Attitudes of Farm Operators in Relation to Selected Social and Economic Characteristics**

The attitudes of farm operators toward wetlands, drainage, and waterfowl production as related to certain social, personal and economic characteristics were examined. Personal characteristics employed were age, income and education of the farm operator. Farm size, farm ownership, type of farm operation, composition of farmland, involvement in wetland programs, draining of farm property, hunting activities, neighbor participation in wetland programs and neighbor participation in drainage programs were also explored.

Farm operators below age 40 tended to have the least favorable attitudes toward wetlands, whereas those between 40 and 59 years of age have the most favorable attitudes (Table 4).

Variation in attitude commitment did not vary to a high degree when income was related to attitudes.

A certain amount of variation existed when the amount of education was related to the attitudes of farm operators toward wetlands. Farm operators who have from 9 to 12 years of education tend to have the least favorable attitudes, while farm operators who have over 12 years of education have the most favorable attitudes.

When the size of the farm was related to attitudes toward wetlands, it was found that those farm operators who have the smallest farms (0-300 and 301-600 acres) have the most favorable attitudes toward wetlands.

When attitudes toward waterfowl production were related to farm ownership, little difference in response was noted.

Attitudes toward wetlands, drainage and waterfowl production were examined in regard to livestock and grain operations. Very little varia-

**Table 4. Attitudes Toward Wetlands**

	Most Favorable Per Cent (N—92)	Moderately Favorable Per Cent (N—101)	Least Favorable Per Cent (N—99)	Total Per Cent (N—292)
(all columns in each category total 100%)				
Age of Farm Operator				
Under 40	13	15	22	17
40-59	57	47	48	50
60 and over	30	37	30	33
Education of Farm Operator (Years of school completed)				
0-8	58	55	57	57
9-12	30	32	40	34
Over 12	12	13	3	9
Size of Farm (Acres)				
0-300	28	25	21	25
301-600	47	46	33	42
601-900	14	14	19	24
Over 900	11	14	27	17
Farm Property in Wetlands				
0-5%	54	58	43	52
6-10%	20	15	38	24
Over 10%	26	27	19	24
Participation in Wetland Programs				
Yes	26	13	20	20
No	74	87	80	80
Property Drained				
Yes	35	44	54	44
No	65	56	46	56

tion in attitude response was noted.

Little variation in attitude response was found to exist between the composition of the farm land and attitudes toward wetlands, drainage and waterfowl production except where the amount of property in wetlands was related to attitudes toward wetlands (Table 4) and waterfowl production (Table 5). Those farm operators who have zero to 5% and over 10% of their property in wetlands, showed a

higher rate of the most favorable attitudes.

For those farm operators who participated in wetland programs, a higher rate of the most favorable attitudes was present. By comparison, where the farm operator did not participate in wetland programs, a higher rate of less favorable attitudes was evident. The difference in attitude response is not as great as one might expect, however, because the participation in



wetland programs is directly associated with wetlands themselves (Table 4).

A somewhat similar occurrence is evident when attitudes toward waterfowl production are compared to the participation in wetland programs (Table 4).

Farm operators who had recently drained water from their property had less favorable attitudes toward wetlands than the farm operator who had not drained water from his farmlands.

Attitudes of the farm operator toward wetlands were compared to the hunting activities of the individual (Table 6). Comparisons were made relating duck, pheasant, deer, goose, and grouse hunting to the farm operator's attitudes toward wetlands. In addition, attitudes of the farm operator toward waterfowl production were related to

duck and goose hunting activities (Table 7).

It was found that those individuals who participate in duck hunting have more favorable attitudes toward wetlands than those who do not hunt ducks. This same pattern is evident for those farm operators who participate in pheasant, deer, goose and grouse hunting, although the difference between the least and most favorable responses was not as great.

Farm operators who hunt ducks and geese tend to have more favorable attitudes toward waterfowl production than those who do not hunt these birds.

Very little difference in attitude response was noted between those farm operators who had close neighbors participating in wetland and drainage programs and those that did not (Tables 8 & 9).

Table 5. Attitudes Toward Waterfowl Production

	Most Favorable Per Cent (N—98)	Moderately Favorable Per Cent (N—101)	Least Favorable Per Cent (N—93)	Total Per Cent (N—292)
(all columns in each category total 100%)				
Farm Property (% in Wetlands)				
0-5%	57	56	41	52
6-10%	16	19	39	24
Over 10%	27	25	20	24
Participation in Wetlands Program				
Yes	24	18	16	20
No	76	82	84	80
Farm Property Drained				
Yes	37	49	47	44
No	63	51	53	56

**Table 6. Participating in Hunting and Attitudes Toward Wetlands**

		Most Favorable Per Cent (N—92)	Moderately Favorable Per Cent (N—101)	Least Favorable Per Cent (N—99)	Total Per Cent (N—292)
(all columns in each category total 100%)					
Duck	Yes	48	48	31	42
	No	52	52	69	68
Pheasant	Yes	55	52	40	49
	No	45	48	60	51
Deer	Yes	38	32	31	34
	No	62	68	69	66
Goose	Yes	37	33	23	31
	No	63	67	77	69
Grouse	Yes	7	10	5	7
	No	93	90	95	93

**Table 7. Participation in Hunting and Attitudes Toward Waterfowl Production**

		Most Favorable Per Cent (N—98)	Moderately Favorable Per Cent (N—101)	Least Favorable Per Cent (N—93)	Total Per Cent (N—292)
Duck Hunting	Yes	56	36	34	42
	No	44	64	66	58
Goose Hunting	Yes	42	29	22	31
	No	58	71	78	69

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**Table 8. Farm Neighbors Participating in Wetland Programs and Attitudes of the Farm Operators toward Waterfowl Production**

Farm Neighbors Participating in Wetlands Programs	Most Favorable Per Cent (N—67)	Moderately Favorable Per Cent (N—78)	Least Favorable Per Cent (N—61)	Total Per Cent (N—206)
Yes	51	49	56	51
No	49	51	44	49

**Table 9. Farm Neighbors Participating in Drainage Programs and Attitudes of the Farm Operators toward Waterfowl Production**

Farm Neighbors Participating in Drainage Programs	Most Favorable Per Cent (N—73)	Moderately Favorable Per Cent (N—74)	Least Favorable Per Cent (N—52)	Total Per Cent (N—199)
Yes	34	27	19	28
No	66	73	81	72

## Summary and Conclusions

This study deals with attitudes of farm operators toward particular wetlands related programs and the relationship of selected socio-economic factors to these attitudes. The conservation programs deal with wetlands maintenance, drainage and waterfowl production. The related socio-economic variables include age, income, education, tenure status, size of farm operation, percentage of land in wetlands, recreational hunting patterns and experience with the conservation programs. The farm operators interviewed in the study reside in four South Dakota counties located in the North American Prairie Pothole Region. Interviews were completed with 292 of the approximately 2,300 farm operators in the area.

The findings from this study will be presented under headings involving attitudes toward the three programs: wetlands, waterfowl production and drainage.

### Attitudes Toward Wetlands

Three of the variables were related to the farm operators' attitudes toward wetlands. The size of farm operation was inversely associated with favorableness of attitudes toward wetlands. Operators of smaller farms possessed more favorable attitudes than operators of the larger farms. The amount of farm property in wetlands was also associated with the farm operators' attitudes toward wetlands. Farm operators having 5% or less and those with more than 10% of their land in wet-

lands had more favorable attitudes toward wetlands. The farmers with smaller amounts of wetlands, while favorable toward wetlands programs, apparently felt they were too small to make participation worthwhile. Those with 6 to 10% of their farms in wetlands indicated that the wetlands did not merit participation in the programs, but were sufficiently large enough to create a nuisance in carrying out the major enterprise. The farm operators with over 10% of their land in wetlands appear to offer the greatest number of potential participants for wetlands programs. The type of recreational hunting by the farm operators is related to his attitude toward wetlands programs. Duck hunters were most favorable to wetlands programs with goose hunters being somewhat favorable and the deer and upland game bird hunter being least favorable. Duck hunters recognize the need for wetlands in the reproduction of the species but goose hunters may not feel the wetlands are necessary since the reproduction of these birds usually occurs farther north. Farm operators who recently have drained water from their land were also less favorable toward wetlands.

Factors not found to be related to attitudes toward wetlands included age, income, education, tenure status of the farm operators, and the proportion of his property under cultivation or in native hay and pasture.

#### **Attitudes Toward Waterfowl Program**

When the amount of farm property in wetlands was associated with attitudes toward waterfowl

production, the farmers' responses exhibited a degree of variation. Those with less than 5% and more than 10% of their property in wetlands indicated the highest rate of favorable attitudes. Those in the 6 to 10% group had the least favorable attitudes. Farm operators who hunt ducks and geese hold more favorable attitudes toward waterfowl production programs. These farmers have a vested interest in maintaining production of these birds. Support for the waterfowl production programs will come largely from farm operators who participate in recreational hunting dependent upon these programs.

The variables of tenure status, type of farming operations, property in native hay or pasture, property under cultivation, and reference group influences were not related to attitudes toward waterfowl production.

#### **Attitudes Toward Drainage**

Favorableness of attitudes toward drainage programs was not related to the composition of farmland variables—property in native hay or pasture and property under cultivation. Reference groups were not significantly related to attitudes toward drainage.

A point of general interest is the lack of difference between farm operators involved in wetlands programs and those who are not and their respective attitudes toward wetlands and waterfowl production. A possible explanation for this may be that participation in wetlands programs is based almost solely on economic gain considerations rather than those related to conservation of natural resources.